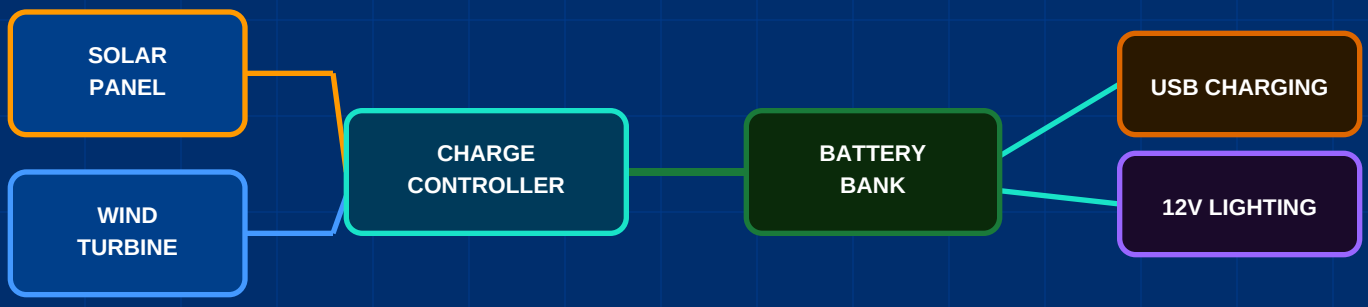
COMMUNITY POWER GRID

Open-Source Emergency Energy Independence System

Build electricity for your neighborhood. No grid. No fuel. No cost to share.



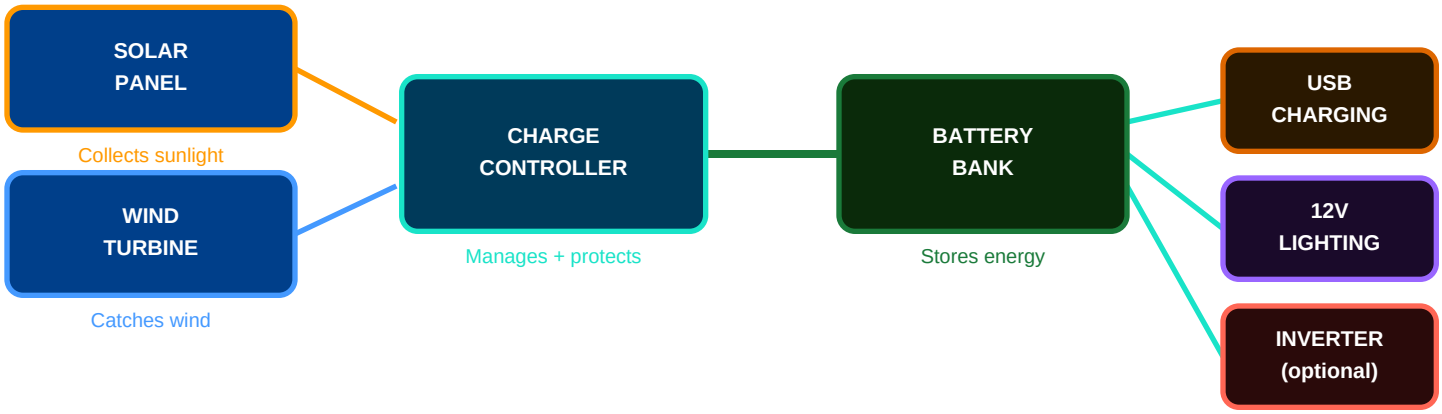
WHAT'S INSIDE:

1. How the System Works
2. Every Part You Need
3. Build the Wind Turbine
4. Solar Panel + Battery Setup
5. Complete Wiring Diagram
6. Power Output + Community Strategy
7. Safety Rules
8. Quick Reference Card

Version 1.0 | AbzuNet Freedom Suite | SynthicSoft Labs LLC | Free to copy, share, print, and build.

Before You Build — Understand the Big Picture

This system uses free energy from the sun and wind to charge a battery. That battery then powers phones, lights, and radios — day and night. The diagram below shows every part and how they connect.



WIRE COLOR KEY: Solar | Wind | Battery charge | Output to devices

FOLLOW THE ENERGY — STEP BY STEP

STEP 1 SOLAR
Sun hits panel. Light → electricity.

STEP 2 WIND
Wind spins turbine. Alternator makes power.

STEP 3 CONTROLLER
Both feed controller. Safely fills battery.

STEP 4 BATTERY
Battery stores energy. Available day and night.

STEP 5 OUTPUT
USB adapters charge phones, lights, radios.

Six components. All cheap. Most can be found used.

You do not need everything on day one — start with what you have.

PT 1

ALTERNATOR

Used Car Alternator

$20–$40 Junkyard / Facebook Marketplace

This is your wind electricity generator — the same part that charges your car battery while driving. Any 12V alternator works.

TIP: Search 'alternator 12V' at a local junky...

PT 2

BATTERY

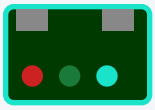
Deep Cycle Battery (100Ah)

$60–$120 Auto parts / Craigslist

Stores all the electricity you generate. MUST be deep cycle (marine or RV type). A regular car starter battery wears out in weeks.

TIP: Ask for 'deep cycle marine battery' — n...

PT 3



CONTROLLER

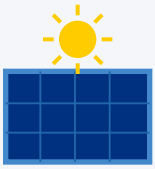
Hybrid Charge Controller (30A)

$25–$40 Amazon / eBay

The brain of the system. Sits between power sources and battery. Prevents overcharging. Without this you risk a battery fire.

TIP: Search: '30A solar wind hybrid PWM c...

PT 4



SOLAR PANEL

100W Solar Panel (12V)

$60–$100 Amazon / eBay / salvage

Flat panel converts sunlight to electricity. Face south, tilt at your latitude. Works on cloudy days at reduced output.

TIP: Any 12V panel works. Monocrystalline i...

PT 5

USB ADAPTER

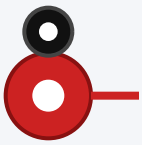
12V Multi-Port USB Adapter

$12–$20 Dollar store / auto parts

Plugs into your battery system to charge phones, tablets, radios, and power banks. Same as a car USB charger, wired in.

TIP: Get one with 4–6 ports. Available almo...

PT 6



WIRE & FUSES

Wire & Fuses

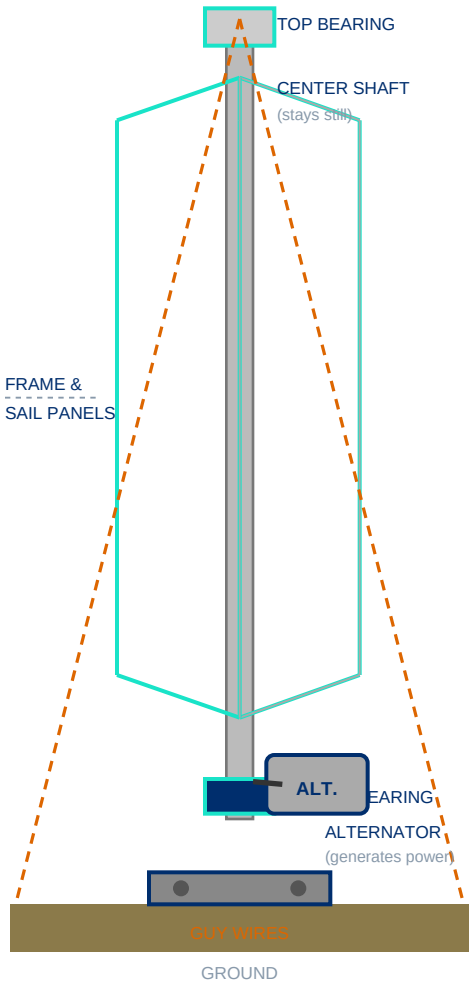
$30–$50 Hardware / auto parts store

12 AWG wire (red and black) for all connections. Inline blade fuses on every positive wire — your fire protection.

TIP: Buy 50ft red + 50ft black 12 AWG wire....

What You Are Building: A Vertical Axis Wind Turbine (VAWT)

A vertical axis turbine spins on a vertical post and catches wind from ANY direction. The geodesic (triangular) frame is very strong and easy to build with PVC pipe. Alternating sail and open panels create the drag difference that causes rotation.



STEP 1 — Center Shaft

Steel pipe, 6–8 ft tall, 1.5–2 inch diameter.
Anchored at bottom. Does NOT spin.
The frame rotates AROUND this shaft.

STEP 2 — Top & Bottom Bearings

One flanged bearing at top, one at bottom.
Match inner diameter to your pipe size.
Skateboard bearings work for small builds.

STEP 3 — Geodesic Frame

Cut PVC conduit into equal lengths (18–24 in).
Connect into triangular panels at corners.
Frame attaches to shaft via the bearings.

STEP 4 — Sail Panels

Cover every OTHER triangular panel with tarp.
Leave alternating panels open.
The drag difference causes the frame to spin.

STEP 5 — Pulley + Belt to Alternator

Large pulley (6–8 in) on turbine shaft.
Small pulley (2 in) on alternator shaft.
Belt connects them: 4:1 ratio = 4× speed.

STEP 6 — Guy Wires + Base Plate

Four guy wires from shaft top to ground stakes.
Space at 90° intervals around the base.
Bolt base plate to ground — mandatory.

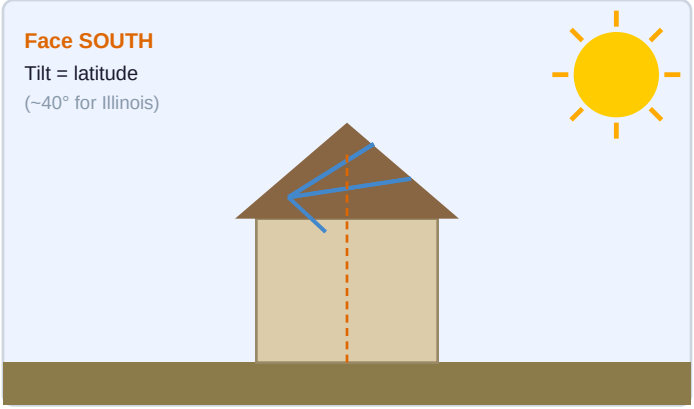
DANGER:

Anchor ALL guy wires and the base plate BEFORE first test spin. An unanchored turbine can fall or throw debris in high winds. No exceptions.

SECTIONS 2 & 3 — SOLAR PANEL + BATTERY BANK

Setup, Placement & Sizing

SOLAR PANEL SETUP



Face SOUTH: Always face south (Northern Hemisphere)

Tilt It: Tilt angle equals your latitude in degrees

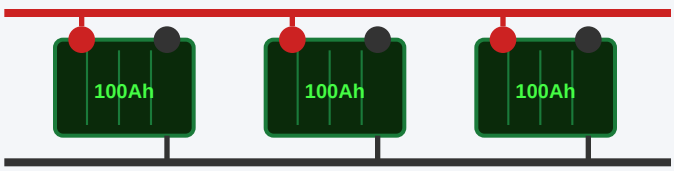
No Shade: Any shadow drastically cuts output

Secure It: Bolt down — panels catch wind like a sail

Add More: Parallel: positive to positive, negative to negative

BATTERY BANK SETUP

3 × 100Ah = 300Ah TOTAL | Voltage stays 12V



Wire positive-to-positive, negative-to-negative

- Only use in an absolute emergency.
- Wears out in weeks when cycled daily.

CAR STARTER — NOT RECOMMENDED

- Find used at RV dealers or online.
- Built for repeated drain and recharge.

DEEP CYCLE MARINE — RECOMMENDED

- Maintenance free — worth the cost.
- Sealed, no fumes, safe indoors.

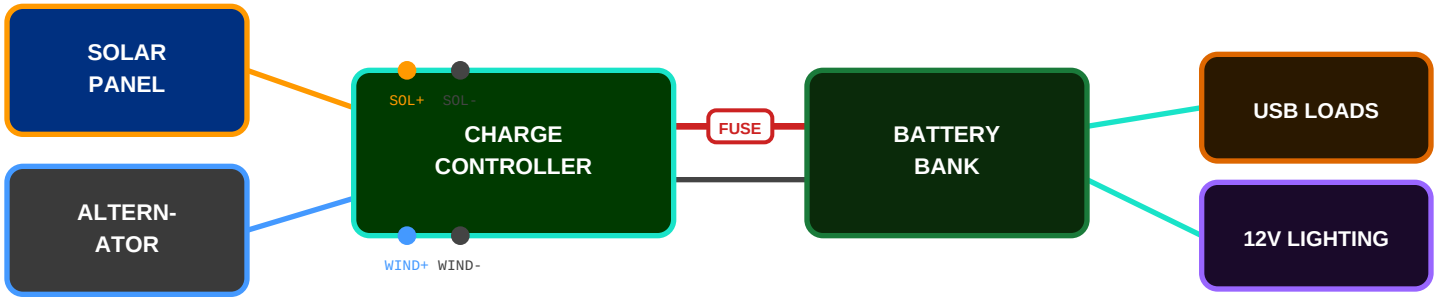
AGM SEALED — BEST CHOICE

THE GOLDEN RULE — Always Wire in This Exact Order:

1ST	2ND	3RD	4TH
Battery → Controller	Loads (USB) → Controller	Solar → Controller	Alternator → Controller

DANGER:
Connecting solar or wind BEFORE the battery is wired can instantly destroy the controller. Always wire battery first. Every single time, without exception.

COMPLETE WIRING DIAGRAM



RED = Positive (+) | BLACK = Negative (–) | ORANGE = Solar positive | BLUE = Wind/Alt positive

CONTROLLER TERMINALS — WHAT GOES WHERE

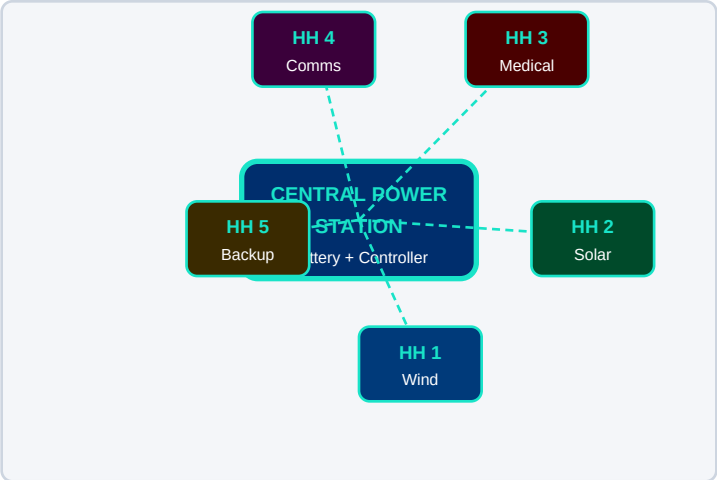
BAT +	Battery positive terminal — WIRE FIRST	BAT –	Battery negative terminal — WIRE FIRST
LOAD+	USB adapter positive wire	LOAD–	USB adapter negative wire
SOL +	Solar panel positive wire	SOL –	Solar panel negative wire
WIND+	Alternator B+ output	WIND–	Alternator case / ground

WHAT CAN YOU POWER?

Phone Charging	Charge 60+ phones per day on 100Ah.	~5W
Emergency Radio	Critical for news. Very low drain.	~5W
LED Lighting (12V)	Lights a room for 80+ hours on 100Ah.	~10W
Laptop	Possible. Drains battery in ~2 hours.	~45W
CPAP / Medical	Needs inverter. Prioritize above all.	~30W
Small Fan	Usable overnight on a 100Ah battery.	~25W
Mini Fridge	Needs large system. Drains fast.	~60W
Space Heater	NEVER attempt on this system.	1000W+
Microwave	NEVER attempt on this system.	1200W+

Easy Use sparingly Avoid / impossible

COMMUNITY POWER NETWORK



POWER BANK ROTATION

- Keep 5–10 charged power banks at the central station.
- Residents take a full bank, leave an empty one.
- The station charges depleted banks continuously.
- Nobody crowds the central station.

EMERGENCY PRIORITY ORDER

1. **Communication** — Phones, radios, mesh network
2. **Medical** — CPAP, insulin cooling, equipment
3. **Safety Lighting** — Paths, perimeter, gathering spots
4. **Information** — One shared screen for news
5. **Comfort** — Fans, extra lights, misc charging

SAFETY — READ BEFORE BUILDING

Non-Negotiable Rules

These rules keep you safe. Read ALL of them before picking up any tools.

FUSES — Your Most Important Safety Device

- Put an inline fuse on EVERY positive wire, as close to the battery as possible.
- Fuse size should match wire capacity — 12 AWG wire uses a 20A fuse maximum.
- If a fuse keeps blowing: find and fix the short circuit. Never upsize the fuse.
- No fuse means one short circuit can cause a battery fire — batteries have no off switch.

WIRING SAFETY

- Never connect solar or wind to the controller BEFORE the battery is already wired.
- Use correct wire gauge — undersized wire overheats under load and causes fires.
- Inspect all connections monthly. Loose connections cause arcing and heat buildup.
- When changing any wiring: disconnect from the battery first.
- Red = positive (+). Black = negative (–). Never swap them.

BATTERY SAFETY

- Lead acid batteries produce hydrogen gas while charging. Always charge with ventilation.
- AGM/Gel batteries are safer but still need air circulation in any confined space.
- NEVER short circuit a battery — the current released can cause severe burns or explosion.
- Wear safety glasses when working near any battery.
- Keep baking soda nearby — it neutralizes battery acid spills instantly.

WIND TURBINE SAFETY

- NEVER operate without all guy wires secured and base plate fully anchored.
- Apply a mechanical brake during severe storms to prevent overspeed.
- Keep all people and animals clear of the turbine sweep radius during operation.
- Inspect guy wire tension after every major wind event.

QUICK REFERENCE CARD

Print This Page — Keep It With Your System

Everything you need to remember, at a glance.

WIRING ORDER — MEMORIZE THIS

1ST	2ND	3RD	4TH
Battery → Controller	Loads → Controller	Solar → Controller	Alternator → Controller

TROUBLESHOOTING

Battery not charging

- Check all inline fuses — most common cause.
- Check connections at controller terminals for looseness.

USB not working

- Controller may cut off below 11V. Recharge battery.
- Check fuse on the load positive wire.

Solar shows no input

- Any shade on panel kills output — remove shadows.
- Verify + and – in correct controller solar terminals.

Turbine spins, no charge

- Check belt tension on the alternator pulley.
- Verify the alternator field wire is connected.

Battery draining fast

- Check what loads are running — inverters drain fast.
- Check for any wires shorting together.

Controller error light

- Red light usually means over or under-voltage.
- Disconnect all, rewire in correct order: battery first.

WIRE COLORS

RED	BLACK	ORANGE	BLUE
Positive (+)	Negative (–)	Solar positive	Wind / Alt positive

MINIMUM PARTS TO GET STARTED

Used Car Alternator $20–40 Junkyard	**Deep Cycle Battery** $60–120 Auto parts / Craigslist	**Charge Controller 30A** $25–40 Amazon / eBay
100W Solar Panel $60–100 Amazon / eBay	**12V USB Adapter** $12–20 Dollar store / auto parts	**12 AWG Wire + Fuses** $30–50 Hardware store

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"Someone has to build the tools that actually work."